**Supplementary Information**

# Tree height and hydraulic traits shape growth responses across droughts in a temperate broadleaf forest

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Table S1: Species-specific bark thickness regression equations

| Species | Equations | r.2 |
| --- | --- | --- |
| Carya cordiformis | ln[B]=-1.56+0.416*ln[DBH] | 0.226 |
| Carya glabra | ln[B]=-0.393+0.268*ln[DBH] | 0.040 |
| Carya ovalis | ln[B]=-2.18+0.651*ln[DBH] | 0.389 |
| Carya tomentosa | ln[B]=-0.477+0.301*ln[DBH] | 0.297 |
| Fagus grandifolia | ln[B]=1*ln[DBH] | |
| Fraxinus americana | ln[B]=0.418+0.268*ln[DBH] | 0.256 |
| Juglans nigra | ln[B]=0.346+0.279*ln[DBH] | 0.246 |
| Liriodendron tulipifera | ln[B]=-1.14+0.463*ln[DBH] | 0.545 |
| Quercus alba | ln[B]=-2.09+0.637*ln[DBH] | 0.603 |
| Quercus prinus | ln[B]=-1.31+0.528*ln[DBH] | 0.577 |
| Quercus rubra | ln[B]=-0.593+0.292*ln[DBH] | 0.087 |

Table S2: Species-specific height regression equations

| Species | Equations | r.2 |
|---|---|---|
| Carya cordiformis | ln[H] = 0.332+0.808*ln[DBH] | 0.874 |
| Carya glabra | ln[H] = 0.685+0.691*ln[DBH] | 0.841 |
| Carya ovalis | ln[H] = 0.533+0.741*ln[DBH] | 0.924 |
| Carya tomentosa | ln[H] = 0.726+0.713*ln[DBH] | 0.897 |
| Fagus grandifolia | ln[H] = 0.708+0.662*ln[DBH] | 0.857 |
| Liriodendron tulipifera | ln[H] = 1.33+0.52*ln[DBH] | 0.771 |
| Quercus alba | ln[H] = 0.74+0.645*ln[DBH] | 0.719 |
| Quercus prinus | ln[H] = 0.41+0.757*ln[DBH] | 0.886 |
| Quercus rubra | ln[H] = 1.00+0.574*ln[DBH] | 0.755 |
| all | ln[H] = 0.839+0.642*ln[DBH] | 0.857 |

Table S3: Palmer drought severity index (PDSI) by month for focal droughts

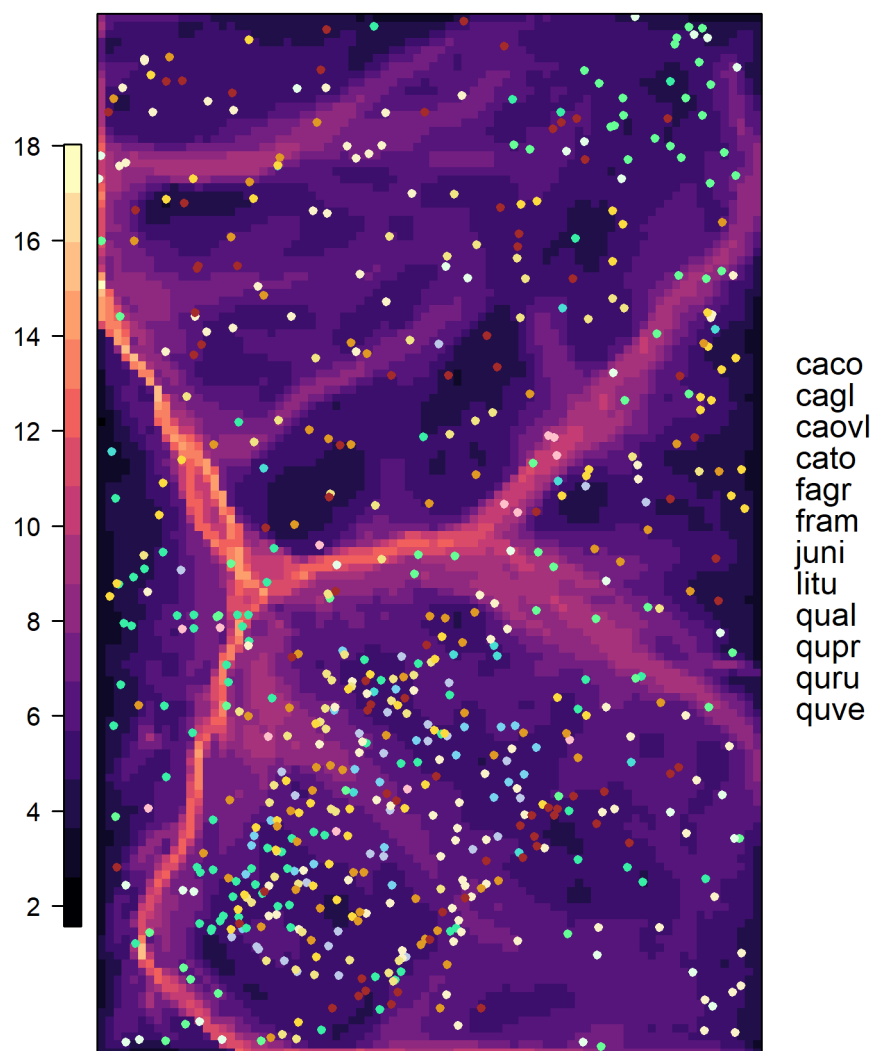| year | month | PDSI | rank |
|------|-------|------|------|
| **focal droughts** | | | |
| 1966 | May | -2.98 | 2 |
| | June | -3.40 | 2 |
| | July | -4.08 | 2 |
| | August | -4.82 | 1 |
| | | | |
| 1977 | May | -2.96 | 3 |
| | June | -3.28 | 3 |
| | July | -3.61 | 3 |
| | August | -3.68 | 3 |
| | | | |
| 1999 | May | -3.63 | 1 |
| | June | -4.21 | 1 |
| | July | -4.53 | 1 |
| | August | -4.64 | 2 |
| **other** | | | |
| 1991 | May | -1.79 | 10 |
| | June | -2.10 | 10 |
| | July | -2.17 | 10 |
| | August | -3.06 | 4 |

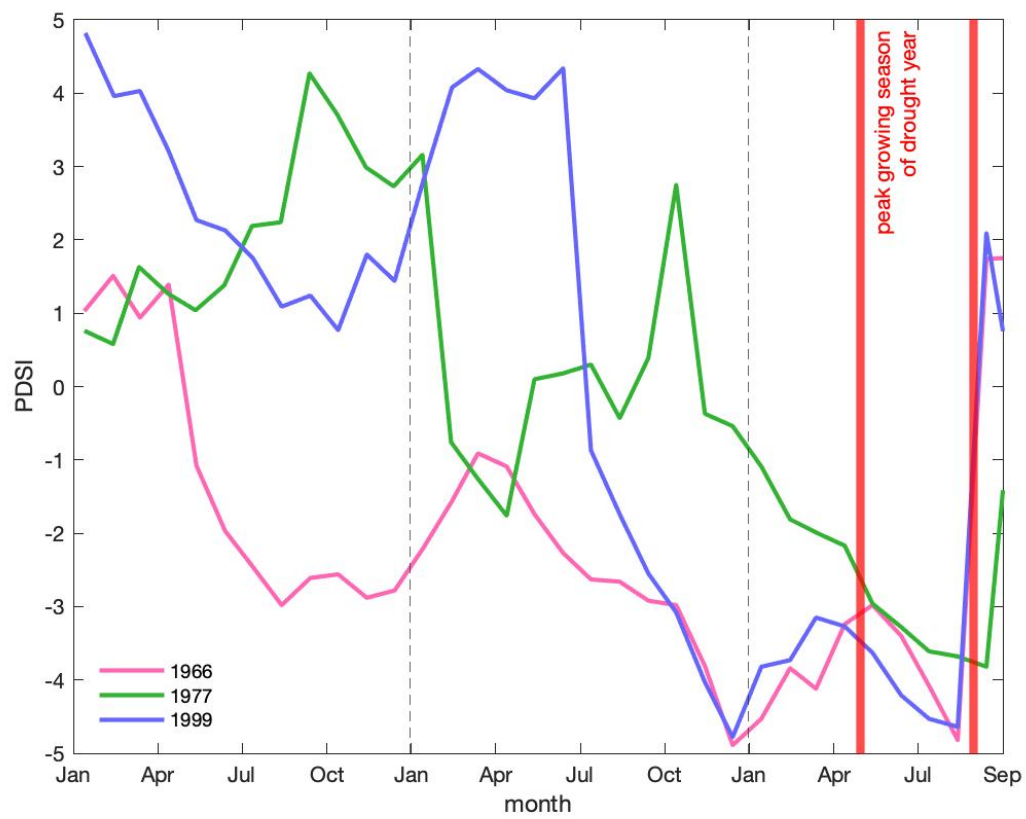Figure S1: Map of ForestGEO plot showing TWI and location of cored trees

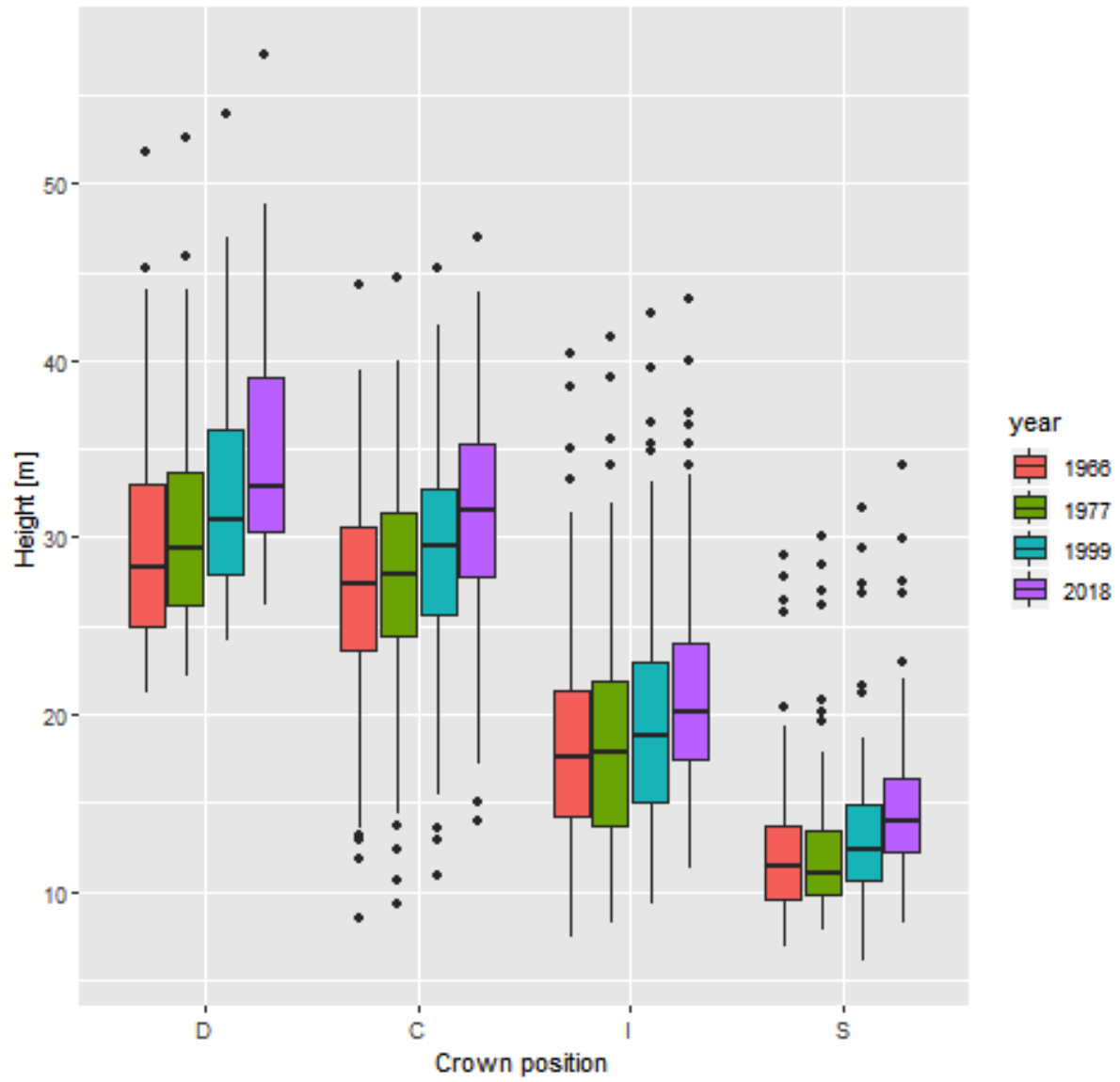Figure S2: Time series of Palmer Drought Severity Index (PDSI) for the 2.5 years prior to each focal drought

Figure S3: Height by canopy position across the three focal droughts and in the year of measurement (2018)